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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte PO HU and JEAN-PIERRE GERARD

Appeal 2015-002845
Application 13/403,577
Technology Center 3600

Before: MURRIEL E. CRAWFORD, JOSEPH A. FISCHETTI, and MICHAEL W. KIM, *Administrative Patent Judges*.

FISCHETTI, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE[1]

Appellants seek our review under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1–5, 10–17, and 22–28. We AFFIRM.

[1] The Appellants identify MasterCard Int'l Inc. as the real party in interest. (Appeal Br. 3).

THE CLAIMED INVENTION

Appellants' claims relate generally to "a credit card profitability model, wherein transaction data is used to optimize credit line decrease decisions." (Spec. 10, ll. 19–20). Claim 1 is illustrative of the claimed subject matter:

> 1. A method comprising the steps of:
>
> obtaining, by at least one hardware processor, electronic data from a payment processing network for a plurality of credit accounts for a first predetermined period of time;
>
> estimating, by said at least one hardware processor, a probability of default for each of said credit accounts from said data obtained from said payment processing network;
>
> calculating, by said at least one hardware processor, an expected profitability for each of said credit accounts based on said data obtained from said payment processing network, wherein said expected profitability for a respective one of said credit accounts is risk-weighted according to said estimated probability of default for said respective one of said credit accounts, and wherein a risk-weighted expected profitability is a value calculated as a difference between a current balance of said respective one of said credit accounts and a predicted value of one of a loss and a profit of said respective one of said credit accounts multiplied by said probability of default said respective one of said credit accounts;
>
> dividing, by said at least one hardware processor, said credit accounts using at least one cut-off selected based on said risk-weighted expected profitabilities of said credit accounts; and
>
> modifying, by said at least one hardware processor, a credit line accessible via the payment processing network and associated with at least one of the credit accounts based on said at least one cut-off.

REFERENCES

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Tanaka	US 7,941,363 B2	May 10, 2011
Carrier	US 8,078,529 B1	Dec. 13, 2011
Brown	US 2004/0128236 A1	July 1, 2004
Pednault	US 2009/0030864 A1	Jan. 29, 2009

REJECTIONS

The following rejections are before us for review.

The Examiner rejected claims 1–5, 10–17, and 22–28 under 35 U.S.C. § 101 as reciting ineligible subject matter.

The Examiner rejected claims 25 and 26 under 35 U.S.C. § 112, first paragraph, as not meeting the written description requirement.

The Examiner rejected claims 12 and 24–26 under 35 U.S.C. § 112, second paragraph, as indefinite.

The Examiner rejected claims 1–5, 12–17, 24, 25, and 27 under 35 U.S.C. § 103(a) as unpatentable over Brown and Tanaka.

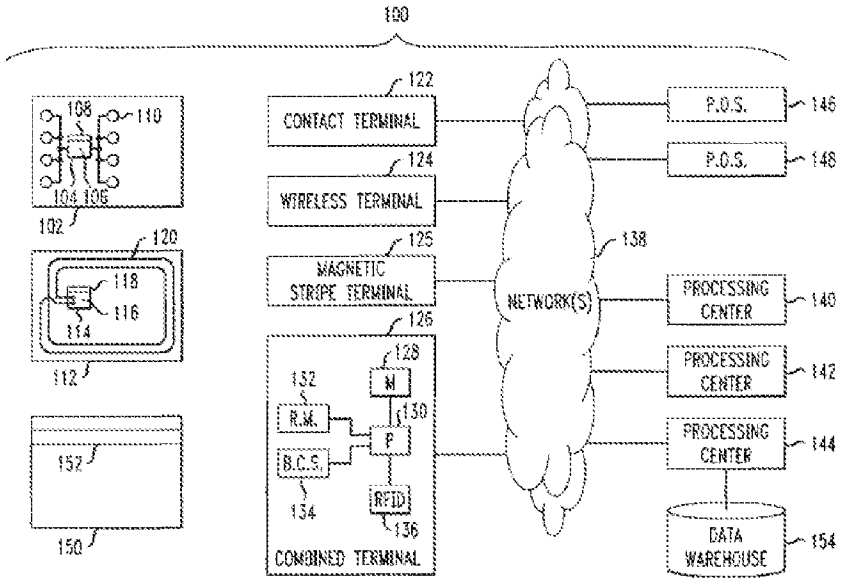
The Examiner rejected claims 10 and 22 under 35 U.S.C. § 103(a) as unpatentable over Brown, Tanaka, and Carrier.

The Examiner rejected claims 11, 23, 26, and 28 under 35 U.S.C. § 103(a) as unpatentable over Brown, Tanaka, Carrier, and Pednault.

FINDINGS OF FACT

We find the following facts by a preponderance of the evidence.

1. The Specification describes that "[a]s described above in connection with Equations 4-7 and FIG. 7, one or more embodiments determine the estimated probability of default for each of the accounts based on a discretization of the account-level data." (Spec. 24, ll. 23–25).
2. Appellants' Figure 1 shows a diagram of a system, as shown below:



Appellants' Figure 1 showing a system schematic.

3. Appellants' Figure 7 discloses a graph, as shown below:

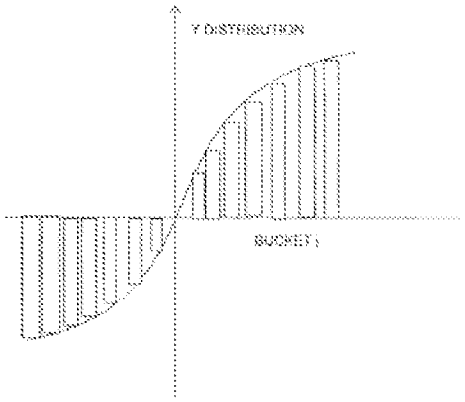


Figure 7 showing a graph.

4. The Specification discloses, in conjunction with estimating account profitability, Equation 4, shown below:

$$c_k(x) = \ln \frac{P(Y \le j|x)}{P(Y > j|x)} = \ln \frac{f_0(X) + f_1(X) + \ldots f_j(X)}{f_{j+1}(X) + f_{j+2}(X) + \ldots f_j(X)} = \alpha_j - \chi'\beta \quad (4)$$

Where:

α_j are the cut-off points between the categories, and
$f_i(x)$ is the probability of being in class i given covariates x.

Appellants' Equation 4.

(Spec. 18 ll. 14–25).

5. The Specification discloses Appellants' Equation 5, as follows:

$$Prob(class \le j) = 1/(1+e^{**}(-(\alpha_j - \beta_j))) \quad (5)$$

Appellants' Equation 5.

(Spec. 20 l. 1).

6. The Specification discloses Appellants' Equation 6, as follows:

$$P_j - Prob(class = j) = Prob(class \le j) - Prob(class < j) \quad (6)$$

Appellants' Equation 6.

(Spec. 20 l. 7).

7. The Specification discloses Appellants' Equation 7, as follows:

$$\hat{Y} = \sum P_j V_j, \text{ with } V_j = \text{mean interval of bucket j.} \quad (7)$$

Appellants' Equation 7

(Spec. 20 l. 12).

8. Tanaka discloses an "automated process which estimates a future profit from the proposed loan." (Tanaka col. 1, ll. 19–22).

9. Tanaka discloses "the term analysis program function computes the default probability based in part on the term of the loan. The future profit expectancy computation program function computes the expected profit during the loan term for the applicant." (*Id.* at col. 2, ll. 4–8).

10. Tanaka discloses using a current balance to calculate profitability, in that it "computes the amount of the expected profit (future profit expectancy) from a previous month situation in accordance with a previous month status (normally a default) with loan balance, and the "default probability for each month (monthly default probability)" of applicant computed from the updated model, based on the previous month situation." (*Id.* at col. 7, ll. 1–9).

ANALYSIS

Rejection under 35 U.S.C. § 101

Appellants argue the abstract idea identified by the Examiner ("[t]aking at least one action (e.g., modifying a credit line) based on cut-offs, the cut-offs selected based on risk-weighted expected profitabilities for credit accounts is a fundamental economic practice" (Answer 6))

> is clearly less abstract than the fundamental economic practices previously identified by the Court including an algorithm (*Gottschalk v. Benson*, 409 U.S. 63 (1972)), mathematical formula (*Parker v. Flook*, 437 U.S. 584 (1978)), hedging risk (*Bilski v. Kappos*, 561 U.S. 593) and using intermediated settlements (*Alice Corp.*).

Reply Br. 11. Appellants also assert the Examiner has not "alleged why the supposed abstract idea is a fundamental economic practice." *Id.*

Laws of nature, natural phenomena, and abstract ideas are not patentable. (*Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014) (*quoting Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107, 2116 (2013))).

The Supreme Court in *Alice* reiterated the two-step framework, set forth previously in *Mayo Collaborative Services v. Prometheus Labs., Inc.*,

132 S. Ct. 1289, 1300 (2012), "for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of these concepts." (*Alice*, 134 S. Ct. at 2355). The first step in that analysis is to "determine whether the claims at issue are directed to one of those patent-ineligible concepts." (*Id.*). If so, the second step is to consider the elements of the claims "individually and 'as an ordered combination"' to determine whether the additional elements "'transform the nature of the claim' into a patent-eligible application." (*Id.* (*citing Mayo*, 132 S. Ct. at 1291, 1297)). In other words, the second step is to "search for an 'inventive concept'--*i.e.*, an element or combination of elements that is 'sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.'" (*Id.* (*citing Mayo*, 132 S. Ct. at 1294)).

Taking independent claim 1 as representative, we find that this claim recites steps that involve obtaining account information on a loan account, estimating the chances of default, calculating the financial impacts of default or lack of default going forward, classifying accounts by risk and financial impact, and taking action on certain classes of accounts. These steps are routine account management tasks on credit accounts, long prevalent in our system of commerce, performed by lenders. Actions taken on accounts at high risk of default may encompass closing or restricting accounts, charging higher fees, demanding payment of the full balance, and so on. Actions taken on accounts at low risk of default may have lower fees, the extension of additional credit, and so on. The claims, thus, describe normal business

functions that represent fundamental economic practices in the commercial world of lending, and are, thus, directed to abstract ideas.[2]

Turning to the second step of the *Alice* analysis, mental processes, *e.g.*, computing a probability and profitability, as recited in claim 1, remain unpatentable even when automated to reduce the burden on the user of what once could have been done with pen and paper. (*Id.* at 1375 ("That purely mental processes can be unpatentable, even when performed by a computer, was precisely the holding of the Supreme Court in *Gottschalk v. Benson*, [409 U.S. 63 (1972)]."). Claim 1, at best, "adds" only a processor that performs the abstract mental processes of gathering data, making calculations, and separating accounts into groups based on the calculations, before potentially altering a parameter of an account. The claims, therefore, merely add a generic computer component, which does not satisfy the inventive concept. "[A]fter *Alice*, there can remain no doubt: recitation of generic computer limitations does not make an otherwise ineligible claim patent-eligible. The bare fact that a computer exists in the physical rather than purely conceptual realm 'is beside the point.'" (*DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1256 (Fed. Cir. 2014) (internal citations and quotation marks omitted)).

Nothing in claims 1–5, 10–17, and 22–28 purports to improve computer functioning or "effect an improvement in any other technology or technical field." (*Alice*, 134 S. Ct. at 2359). Nor do claims solve a problem unique to the Internet. (*See DDR Holdings*, 773 F.3d at 1257). The claims

[2] Although different words are used, these findings comport substantively with the Examiner's identification of what independent claim 1 is directed to, and that it is constitutes a fundamental economic practice. Ans. 6–7.

also are not adequately tied to "a particular machine or apparatus." (*Bilski v. Kappos*, 561 U.S. 593, 600 (2010)).

Additionally, we find no meaningful distinction between independent method claim 1 and either independent system claim 13, independent apparatus claim 25, or independent program product claim 27; the claims all are directed to the same underlying invention. As the Federal Circuit has made clear "the basic character of a process claim drawn to an abstract idea is not changed by claiming only its performance by computers, or by claiming the process embodied in program instructions on a computer readable medium." (*See CyberSource*, 654 F.3d at 1375-76 (*citing In re Abele*, 684 F.2d 902 (CCPA 1982))).

Because claims 1–5, 10–17, and 22–28 are directed to an abstract idea and nothing in the claims adds an inventive concept, the claims are not patent-eligible under § 101. Therefore, we sustain the Examiner's rejection of claims 1–5, 10–17, and 22–28 under 35 U.S.C. § 101.

Rejection under 35 U.S.C. § 112, First Paragraph

Appellants advance no argument responsive to the written description rejection the Examiner introduces in the Answer. Therefore, we summarily affirm the rejection of claims 25 and 26 under 35 U.S.C. § 112, first paragraph.

Rejection under 35 U.S.C. § 112, Second Paragraph

The Examiner relies on four separate rationales in rejecting among claims 12 and 24–26 as indefinite.

Dependent claims 12 and 24 recite, in part:

> calculating estimated probabilities of different possible scores with said probability estimation engine module executing on said at least one hardware processor; and
>
> assigning a ranking score to each respective credit account in said plurality of credit accounts with said score ranking module executing on said at least one hardware processor; and
>
> forwarding said expected profitability with said input/output module executing on said at least one hardware processor.

Regarding claims 12 and 24, the Examiner finds these claims are "written in singular form (i.e., as though there is a single expected profitability). The independent claims from which the claim depends is written in plural form (i.e., 'said expected profitability' is for 'each of said credit accounts')." (Final Act. 2). Appellants argue "the claimed '*expected profitability*' claimed in Claims 12 and 24 in connection with the 'forwarding' step refer to the claimed '*said expected profitability* for each of said credit accounts' as claimed earlier in Claims 12 and 24. This is believed to be clear." (Appeal Br. 10).

We agree with Appellants, because the ordinary artisan reading claims 12 and 24 would understand the "forwarding said expected probability" refers to the several instances of "expected profitability for each of said credit accounts," such that there is no mismatch of plural probabilities and a single probability.

Still regarding claims 12 and 24, the Examiner find it "is unclear what the 'different possible scores' are for" in these claims, and also finds "[h]ow the 'different possible scores' and the 'ranking scores' are used to derive the 'expected profitability' has not been established." (Final Act. 2–3).

Appellants argue in response that the Specification gives examples of calculations (citing page 20, lines 4–11), and that "[c]laims 12 and 24

require only that the calculation of the expected profitability for each of the credit accounts includes calculating the estimated probabilities of different possible scores and that each account is ranked based on the expected value of the profitability in calculating the expected profitability for each of the credit accounts." (Appeal Br. 11).

We are unpersuaded by Appellants' argument. Claim 12, which incorporates claim 1 by its dependence, calculates the "estimated probabilities of different possible scores," but nothing in the claim or Specification describes what the "different possible scores" are based on, how they are calculated, or what the scores represent. In addition, the account is assigned "a ranking score," but it is not clear if the ranking is based on the calculated score, or something else. We, thus, agree these claims are indefinite.

Regarding claims 25 and 26, the Examiner finds the claims recite several "means for" clauses, each of which invokes 35 U.S.C. § 112, sixth paragraph, but finds "the written description fails to disclose the corresponding structure, material, or acts for the claimed function." (Final Act. 3–4).

Appellants argue "the corresponding structure is not simply a general purpose computer by itself but a special purpose computer as programmed to perform the disclosed methods." (Appeal Br. 12). We are not persuaded by Appellants' argument.

For computer-implemented means-plus-function claims where the disclosed structure is a computer programmed to implement an algorithm, "the disclosed structure is not the general purpose computer, but rather the special purpose computer programmed to perform the disclosed algorithm."

(*WMS Gaming, Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999)). Thus, the Appellants must disclose, at least to the satisfaction of one of ordinary skill in the art, enough of an algorithm to provide the necessary structure under § 112, ¶ 6.

In support of independent claim 25, for the limitation "means for estimating a probability of default for each of said credit accounts from said data," Appellants direct us to their Figure 1 and page 24, lines 23-25 of the Specification. (Appeal Br. 7). Figure 1 shows a general hardware layout of an exemplary implementation, showing component computers, terminals, networks, and other devices, but no process or algorithm is shown. (FF 2). On page 24, the cited section reads "[a]s described above in connection with Equations 4-7 and FIG. 7, one or more embodiments determine the estimated probability of default for each of the accounts based on a discretization of the account-level data." (FF 1). Figure 7 discloses a graph, but a graph is not an algorithm. (FF 3). Equations 4–7, described on pages 18–20, provide examples of formulas for calculating profitability. (*See* FF 4–7). Independent equations are not algorithms (machine code requires to specifically encode a computer) in and of themselves, and equations about profitability, as addressed by Equations 4–7, do not address the claimed "estimating a probability of default."

Appellants have, thus, not disclosed adequate structure in support of the functions claimed under 35 U.S.C. § 112, sixth paragraph, rendering independent claim 25 and dependent claim 26 indefinite.

Rejection of Claims 1–5, 12–17, 24, 25, and 27 under 35 U.S.C. § 103(a)

Initially, we note that the Appellants argue independent claims 1, 13, 25, and 27 together as a group. (Appeal Br. 17). Correspondingly, we select representative claim 1 to decide the appeal of these claims, with remaining claims 13, 25, and 27 standing or falling with claim 1. Appellant does not provide a substantive argument as to the separate patentability of claims 2–5, 12, and 13 that depend from claim 1, and claims 14–17 and 24 that depend from claim 13. Thus, claims 2–5, 12–17, 24, 25, and 27 also stand or fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(vii).

Appellants argue the Examiner "relies on the argument that a wherein clause is not limiting" without providing any basis. (Appeal Br. 13–14; *see also* Reply Br. 20–23).

We are not persuaded by Appellants' argument, because the Examiner considers and addresses the wherein clauses, citing to Tanaka's Abstract, column 1, line 19 to column 2, line 15, column 3, lines 43–47, column 6, line 54 to column 7, line 7, and column 7, line 36 to column 8, line 9. (Final Act. 6–7). Thus, the Examiner made a proper prima face case to these claim elements. That the Examiner should further cite, "[s]ee also MPEP § 2111.04 and § 2103 I. C. wherein clause is not further limiting of the claimed invention)" (Final Act. 7), does not diminish the finding of facts made to Tanaka.

Appellants argue Tanaka "is limited to calculations of total loss or profit, without considering a current balance as a starting point for such calculations," and, thus, bases profit and loss on the "total amount of the account," instead of the claimed "current balance." (Appeal Br. 15–17; *see also* Reply Br. 23–25).

We are unpersuaded by Appellants' argument.

Tanaka discloses determining risk and profit (FF 8, 9), and uses a "loan balance" for each month based on the past month (FF 10), which is a current balance at each month considered, thus, meeting the claim language.

For these reasons, we affirm the rejection of claims 1–5, 12–17, 24, 25, and 27 under 35 U.S.C. § 103(a).

Rejection of Claims 26 and 28 under 35 U.S.C. § 103(a)

Appellants argue claims 26 and 28 only by reference to the arguments advanced for claim 1, so we affirm the rejection of claims 26 and 28 for the same reasons as claim 1, as set forth above. (Appeal Br. 17).

Rejections of Claims 10, 11, 22, and 23 under 35 U.S.C. § 103(a)

Appellants do not advance any argument specifically addressed to any of dependent claims 10, 11, 22, or 23. Therefore, we summarily affirm the separate rejections of these claims under 35 U.S.C. § 103(a).

CONCLUSIONS OF LAW

The Examiner did not err in rejecting claims 1–5, 10–17, and 22–28 under 35 U.S.C. § 101.

The Examiner did not err in rejecting claims 25 and 26 under 35 U.S.C. § 112, first paragraph.

The Examiner did not err in rejecting claims 12 and 24–26 under 35 U.S.C. § 112, second paragraph, as indefinite.

The Examiner did not err in rejecting claims 1–5, 10–17, and 22–28 under 35 U.S.C. § 103(a).

DECISION

For the above reasons, the Examiner's rejections of claims 1–5, 10–17, and 22–28 under are AFFIRMED.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED